west virginia department of environmental protection

Division of Land Restoration
P.O. Box 38, St. Rt. 20 South
French Creek, WV 26218
(304) 924-6211, fax (304) 924-6781

Joe Manchin III, Governor
Randy C. Huffman, Cabinet Secretary
www.wvdep.org

July 23, 2008

Non-responsive based on revised scope.
Potesta and Associates, Inc.
7012 MacCorkle Avenue, SE
Charleston, West Virginia 25304

RE: Days Inn site, 6400 MacCorkle Ave., SE, Charleston, WV

Dear Non-responsive based on revised s

I have conducted a cursory review of the information presented to me during our meeting on Monday, July 21, and for the most part, find the conclusions by both your firm and TRIAD reasonable based upon the limited site investigation information developed and provided. The primary reservation that I have pertains to the PCE in the ground water.

In discussing site development and environmental due diligence/regulatory compliance decisions, there generally are several options considered by developers: 1) do no environmental investigations and ignore potential environmental harm/liabilities/noncompliance, 2) conduct environmental investigations associated with due diligence and make business decisions based on the findings - this may include making contact with WVDEP and/or EPA, 3) share environmental investigation findings with enforcement programs and seek a No Further Action declaration, and 4) seek statutory protections from enforcement for current and future parties and enter the site into the Voluntary Remediation Program.

From our discussion, I am under the impression that option two is the chosen path.

Please feel free to contact me if you have any questions or if the parties wish to discuss option four, the Voluntary Remediation program.

Sincerely,

Don Martin
Assistant Director

email: dwmartin@wvdep.org

July 17, 2008

Non-responsive based on revised scope.

BB&T
5130 Parkway Plaza Boulevard
Charlotte, North Carolina, 28217

RE: Draft Review and Comments - Triad Engineering, Inc. Phase II ESA Report
Days Inn Site
6400 MacCorkle Avenue SE
Charleston, Kanawha County, West Virginia
Project No. 0101-08-0380

Dear Non-responsive based on revised scope.

Potesta & Associates, Inc. (POTESTA) performed a review of the *Phase II Environmental Assessment Report*, dated July 11, 2008, by Triad Engineering, Inc. for the above referenced, approximately 2.72-acre, site (Triad Phase II ESA) at the request of Mr. Michael Thompson of Realcorp, Inc.. The Triad Phase II ESA is included as **Appendix A**. POTESTA's review and comments are limited to the potential exposure to human receptors from site media through the use of the site as a motel/hotel.

The Phase II ESA consisted of advancement of three soil borings, submittal and analysis of three soil samples and two groundwater samples. Soil samples analyzed were as follows:

- SB-1 at a depth of 11-12 feet below ground surface (bgs),
- SB-2 at a depth of 11-12 feet bgs, and
- SB-3 at a depth of 4-5 feet bgs.

Groundwater was encountered at 28 feet bgs in SB-1 and SB-2. Samples were collected and submitted for analysis (labeled GW-1 and GW-2, respectively). Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and total Resource Conservation and Recovery Act (RCRA) metals.

POTESTA compared the Phase II ESA laboratory data to *de minimis* risk-based concentrations (RBCs) used to evaluate exposure risks to human receptors promulgated by the West Virginia Department of Environmental Protection (WVDEP) through the West Virginia Voluntary Remediation and Redevelopment Act (VRRA). The Triad Phase II ESA identified contaminants

of potential concern in subsurface soil and groundwater. POTESTA concluded the completed exposure pathways between potential receptors and subsurface soil and groundwater are limited to direct exposure to construction workers since the majority of the site is paved and there is no known use of groundwater at the site. Exposure to ambient and indoor air from volatilization of VOCs present in subsurface soil or groundwater is complete for all human receptors, including visitors, construction workers, and long-term site workers.

The Triad Phase II ESA reported acetone, arsenic, barium, cadmium, and lead were detected in one or more of the soil samples at concentrations greater than their respective laboratory detection limits. Arsenic was detected in the SB-2 sample at a concentration of 32 milligrams per kilogram (mg/kg). That concentration is greater than its Residential and Industrial RBCs (0.39 mg/kg and 27 mg/kg, respectively), as well as its natural background concentration for West Virginia (13 mg/kg). Given that the site is mostly paved and a construction worker is the potential receptor to subsurface soil, and based on POTESTA's risk assessment experience, the detected arsenic concentration does not present a significant risk of exposure to potential receptors.

Four RCRA metals, arsenic, barium, cadmium, and lead, were detected in concentrations exceeding their respective Groundwater RBCs. The Triad Phase II ESA suggests that these metals may be present in the groundwater due to possible past glass cullet disposal at the site and in the area. Glass cullet was observed in the soil samples, which is known to have been placed in the area of the site. As noted in the Triad Phase II ESA, the Libby Owens Ford Glass Plant operated in the area for many years, and the site and surrounding area may have been used for glass cullet disposal. However, the levels of metals as reported by Triad in the groundwater samples may not accurately represent conditions in the groundwater under the site. The groundwater samples were analyzed for total metals, as opposed to dissolved, and therefore not likely filtered prior to analysis. It is POTESTA's experience that groundwater samples collected using direct push methodologies are typically turbid and contain a significant amount of solids. The elevated levels of metals identified in the groundwater samples may be due to the solids in the samples. However, even at the reported concentrations, the levels of metals in the groundwater do not pose a significant risk to potential receptors (construction workers) at the site.

PCE was identified in groundwater sample GW-1 at a concentration of 15 micrograms per liter (µg/L), exceeding its Groundwater RBC of 5 µg/L. Given that extraction of groundwater (other than for sampling purposes) is not likely at the site, the only pathway of concern for human exposure is through volatilization to indoor air. POTESTA screened the PCE concentration detected in groundwater for *de minimis* residential exposure risks from volatilization to indoor air using the *Johnson-Ettinger Model for Subsurface Vapor Intrusion into Buildings* (*Johnson-Ettinger, 1991 and revised 2004*). POTESTA obtained an electronic copy of the Johnson-Ettinger program from the USEPA website. Copies of the results of the Johnson-Ettinger model

calculations are presented in **Appendix B**. The program was used to calculate the *de minimis* indoor air exposure thresholds presented herein. A summary of the results of the Johnson-Ettinger calculations is as follows:

- The carcinogenic risk to a visitor receptor (i.e., a person on site 20 days per year for 10 years) is 2.5 in one billion, significantly less than the 1 in one million target residential risk.

- The carcinogenic risk to a long-term site worker receptor (default parameters of an employee on site 250 days per year for 25 years) is 5.5 in one hundred million, significantly less than the 1 in one hundred thousand target non-residential risk.

The hazard quotients (for non-carcinogenic effects) for the concentration of PCE detected for the exposure scenarios evaluated were less than one; therefore, the concentration of PCE detected is not a concern for non-carcinogenic effects.

Based on the evaluation of the indoor air exposure pathway and the lack of groundwater use at the site, POTESTA does not consider the concentration of PCE detected in site groundwater to be a human health concern.

Assuming the current and future operation of the property will be as a motel/hotel, POTESTA's review of the laboratory results from the limited soil and groundwater samples analyzed concluded constituents of potential concern are present in those media at concentrations exceeding one or more *de minimis* screening levels for evaluating human exposure risks as established by the WVDEP. However, based on the use of the property, POTESTA has not identified a significant completed risk to human receptors in the laboratory analytical data provided.

This report was prepared to assist Mr. Michael Thompson of Realcorp, Inc. in evaluating and planning with respect to the site. POTESTA and Mr. Thompson mutually devised the scope of this study that is limited to the specific project, location and time period described herein. The scope of services and report represent POTESTA's understanding of site conditions as discernible from information provided by others and obtained by POTESTA using the methods specified. POTESTA assumes no responsibility for information provided or developed by others, except that it applied its professional judgment and expertise in evaluating such information, or for documenting conditions detectable with methods or techniques not specified in the scope of services. In addition, no activity, including sampling, assessment or evaluation of material or substances, may be assumed to be included in this study unless specifically considered in the scope of services and this report.

If you have any questions or require additional information, please contact our office.

Sincerely,

POTESTA & ASSOCIATES, INC.

Non-responsive based on revised scope.
Senior Scientist

DJC/mh

Enclosures

TRIAD ENGINEERING, INC.

PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

ESA081525-Days Inn
6400 MacCorkle Avenue SE
Charleston, Kanawha County, West Virginia

TRIAD Project No. 01-08-0208

Prepared for:

Non-responsive based on revised scope.
BB&T
5130 Parkway Plaza Blvd.
Charlotte, North Carolina 28217

Prepared by:

TRIAD ENGINEERING, INC.
219 Hartman Run Road
P.O. Box 889
Morgantown, West Virginia 26505

July 11, 2008

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report presents the results of the Phase II Environmental Site Assessment (ESA) performed by TRIAD ENGINEERING, INC. (TRIAD) at the Days Inn property located at 6400 MacCorkle Avenue S.E. in Charleston, Kanawha County, West Virginia (Site Property).

The purpose of the Phase II ESA was to assess and evaluate the Site Property for any releases that may have occurred from the former underground storage tanks (USTs) and former pump island operated by the former WV Truck Stop #31. Based on a review of information obtained from the West Virginia Department of Environmental Protection (WVDEP) through a FOIA request, as well as a review of environmental records compiled for the site vicinity by Environmental Data Resources (EDR), there were approximately fourteen tanks removed from the former fuel station. The USTs were installed in 1973 and removed from the ground in 1990. The Site Property had one documented release to soil and/or groundwater reported as leak number 89-154 with a cleanup completion date in 1990. Since portions of the former WV Truck Stop #31 were located on the Days Inn Site Property, a Phase II ESA was requested in order to ascertain if the subsurface soils and/or groundwater at the Site Property have been impacted.

Phase II ESA sampling was performed at the Site Property on Wednesday, July 2, 2008. The general sampling locations, methods, and test parameters were selected based on Site Property physical characteristics, previous land use activities, and known chemicals and materials used at the Site Property as identified in the Phase I ESA. The assessment included detailed review of the Phase I ESA and preparation of a preliminary sampling plan, Site Property reconnaissance to verify the sampling plan and determine sampling locations, field sampling and laboratory analysis, data review/analysis, and report

preparation.

To evaluate the area around the former USTs and pump island, three grab soil samples were collected using a truck mounted direct push Geoprobe® drill rig. In addition, two groundwater samples were collected; one from a former UST area and one down gradient from the former pump island. The associated samples are listed below.

- Subsurface Soil Sample 1 (SB-1) was collected near the south-eastern portion of the Site Property at a depth of 11-12 feet below ground surface (bgs). SB-1 was lab analyzed for the presence of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and lead.
- Groundwater Sample (GW-1) was collected at the location of SB-1. Groundwater was encountered at 28 feet bgs. GW-1 was lab analyzed for the presence of VOCs, PAHs, and lead.
- Subsurface Soil Sample 2 (SB-2) was collected near the eastern portion of the Site Property at a depth of 11-12 feet bgs. Cullet (waste glass) was encountered at this location. SB-2 was lab analyzed for the presence of VOCs, PAHs, lead, arsenic, barium, and cadmium.
- Groundwater Sample (GW-2) was collected at the location of SB-2. Groundwater was encountered at 28 feet bgs. GW-2 was lab analyzed for the presence of VOCs, lead, arsenic, barium, and cadmium. PAHs were not analyzed due to insufficient groundwater volume.
- Subsurface Soil Sample 3 (SB-3) was collected near the central portion of the Site Property at a depth of 4-5 feet bgs. SB-3 was lab analyzed for the presence of VOCs, PAHs, and lead.
- Subsurface soil sample 4 (SB-4) location was deleted due to the presence of utility lines.

Based on the subsurface soil analytical results, TRIAD concludes that subsurface soils on the Site Property have not been adversely impacted by the USTs. However, groundwater at the Site Property has been impacted by a source(s) other than the historical petroleum USTs.

The subsurface soil and groundwater analytical results were compared to their respective West Virginia risk based concentrations (RBCs) for residential soil and groundwater (*West Virginia Title 60, Series 3, Voluntary Remediation and Redevelopment Rule, Table 60-3B*) date July 2008. Arsenic (As), lead (Pb), barium (Ba), cadmium (Cd), and tetrachloroethene (PCE) had concentrations greater than their respective RBCs. Also, concentrations of As, Pb, Ba, naphthalene, and phenanthrene were detected above the laboratory method detection limit in subsurface soil; however, only As was above the residential soil RBC. The elevated concentration of As in the subsurface soil may be indicative of a natural condition typical of the Kanawha River Valley, and does not necessarily warrant remedial action.

Based on the Phase II ESA activities, TRIAD recommends the following;

- The analytical results be reported to the West Virginia Department of Environmental Protection (WVDEP).
- The Site Property owner confers with the WVDEP as to whether remedial action is warranted.
- An Extent of Contamination study be performed in the area of SB-2 for the presence of As, Ba, Cd, and Pb. In the area of SB-1 for Pb and PCE.
- Refer the client to consider an application for the Site Property to be entered into the State of West Virginia's Voluntary Remediation Program. This program offers environmental liability protection. Further, the program provides a Certificate of Completion (COC) to applicants who successfully demonstrate that their site meets risk-based human health and ecological standards.

1.0 INTRODUCTION

This Phase II Environmental Site Assessment (ESA) Report presents the results of environmental investigations conducted by TRIAD ENGINEERING, INC. (TRIAD) at the Days Inn Site Property located at 6400 MacCorkle Avenue S.E., Charleston, Kanawha County, West Virginia. The work was performed under BB&T contract number ESA081525.

TRIAD warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the ASTM Standard E 1903-97 protocol; *Standard Guide for Environmental Site Assessments: Phase II ESA Environmental Site Assessment Process.* These methodologies are described by the standard as representing good commercial and customary practice for conducting an Environmental Site Assessment of a parcel of property for the purpose of evaluating recognized environmental conditions.

However, these findings and conclusions contain all of the limitations inherent in these methodologies which are referred to in the protocol and some of which are more specifically set forth below. There is a possibility that even with proper application of these methodologies conditions may exist on the property that could not be identified within the scope of the assessment. The methodologies of this assessment are not intended to produce all inclusive or comprehensive results, but rather to provide the user with information regarding potential adverse environmental conditions relating to the subject property.

1.1 Site Property Location

The 2.72 acre Days Inn Site Property had once been part of the former WV Truck Stop #31. The surrounding vicinity is a heavily developed area of Charleston, WV that consists of restaurants, commercial businesses, hotels, and residential neighborhoods. MacCorkle Avenue S.E. is west of the Site Property and the

Kanawha River is to the east of the Site Property. The Site Property is located at north latitude 39°18'17.7" west longitude 80°33'47.8." The location of the Site Property is depicted below as **Figure 1, *Site Location Map*** on the *1976 USGS 7.5-minute topographic quadrangle map of Charleston East, W. Va.*

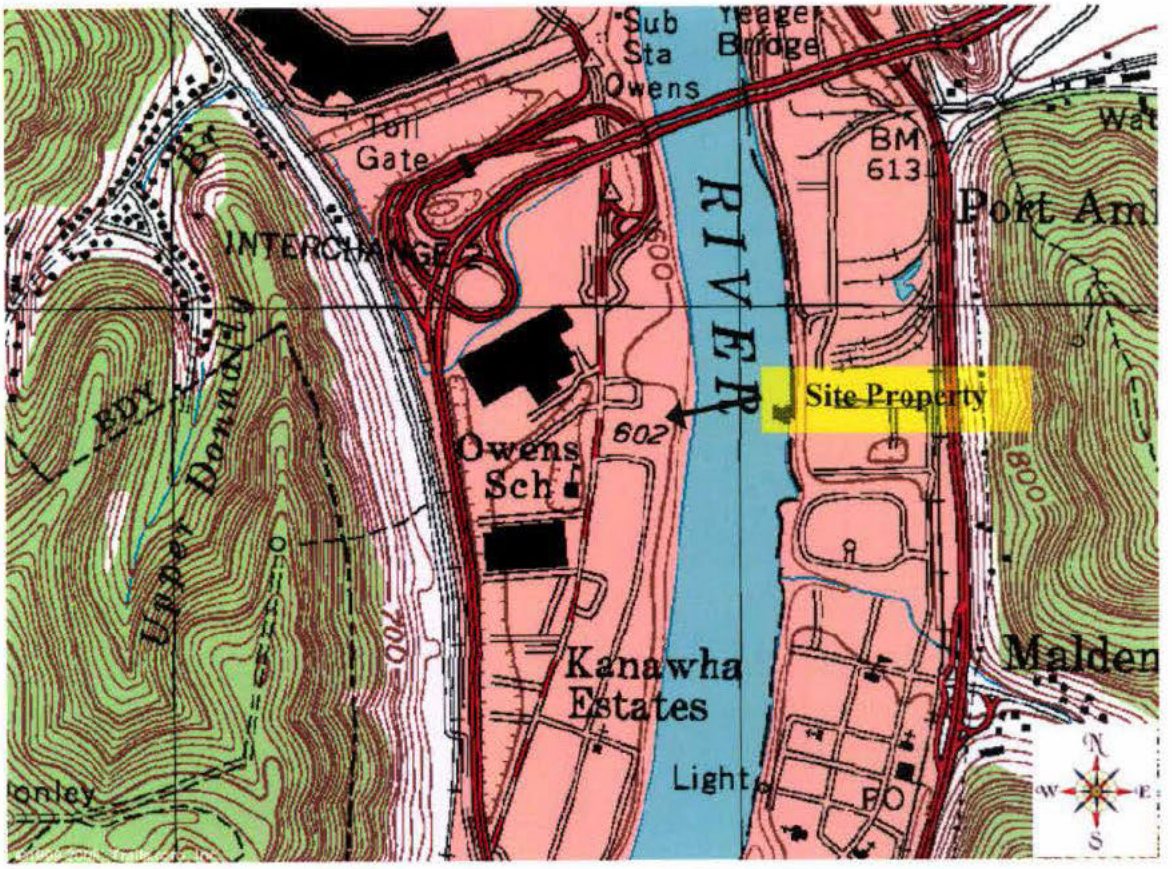


Figure 1. Site Location Map (USGS, 1976)

1.2 Current Use of the Property

The Site Property is currently occupied by Days Inn hotel and Nancy's Lounge. The Days Inn was built in 1995; approximately five years after the USTs were removed from the former WV Truck Stop #31. Photographs depicting the Site Property are provided as **Appendix 1**, **Site Property Photographs**.

2.0 SITE PROPERTY CHARACTERIZATION INVESTIGATION

2.1 Objectives

The objectives of the Phase II ESA activities at the Site Property were as follows:

- Collect four subsurface soil samples in the area of the former USTs and former pump island to ascertain the presence/absence of contamination and the vertical extent of contamination if present;
- Utilize a photoionization detector (PID) to field screen each soil boring for the presence of VOCs;
- Collect two groundwater samples in the area of the former USTs and down gradient from the former pump island to ascertain the presence/absence of contamination; and
- Test each sample for presence of volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and total lead.

2.2 Chemicals of Potential Concern

Due to the history of the Site Property as a service station delivering both gasoline and diesel fuels; VOCs, PAHs, and lead were considered contaminants of potential concern (COPC) at the Site Property.

3.0 PHASE II ESA ACTIVITIES

3.1 Scope of Assessment

The scope of assessment was based on the historical use of the Site Property as a petroleum service station.

Three subsurface soil samples were taken in areas of potential concern on the Site Property. The fourth was deleted due to the presence of sub-grade utilities. These locations were selected proximal to the four former diesel USTs located on the south-eastern portion of the Site Property and the former pump island. In addition, field screening of each soil boring for the presence of VOCs was

conducted with a photoionization detector (PID). Groundwater samples were collected and analyzed at two soil borings that are located on the eastern portion of the site near the Kanawha River in the area of the former USTs and down gradient of the pump island. Groundwater was encountered at approximately 28 feet below ground surface (bgs).

3.1.1 Supplemental Record Review

The supplemental records review was limited to the Phase I ESA which included historical deeds and aerial photographs, and a FOIA file review which included the UST files and Leaking UST (LUST) files provided by the West Virginia Department of Environmental Protection (WVDEP). The historical aerial photographs and survey plats used to identify sampling locations on the Days Inn Site Property are provided in **Appendix 2, Historical Maps**.

3.1.2 Conceptual Site Property Model and Sampling Plan

Human health potentially complete exposure pathways were not identified for direct contact with subsurface soil by residents and visitors due to the property being capped by asphalt. On the other hand, future industrial and/or construction workers could potentially come in contact with subsurface soils.

The groundwater exposure pathway, including potential inhalation, ingestion, or absorption of COPCs in groundwater, was not considered a complete exposure pathway. Groundwater at the Site Property was encountered at 28 feet bgs. Also, the Site Property and surrounding vicinity obtains its potable water and process water from a municipal source. The main municipal source in Charleston is the West Virginia American Water Company which gets its public water intake from the Elk River.

Due to the lack of surface water at the Site Property and no identified ecologically sensitive areas, there are no complete ecological exposure pathways identified.

3.1.3 Chemical Testing Plan

The environmental media collected was submitted to a West Virginia certified laboratory for analysis. The laboratory selected was Pace Analytical Services, 1638 Roseytown Road, Greensburg, PA, 15601. The laboratory analytical data sheets are presented in **Appendix 3, *Laboratory Results***.

3.1.4 Deviations from the Work Plan

Subsurface sample, SB-2, and groundwater sample, GW-2, were also lab analyzed for arsenic, cadmium, and barium due to the glass cullet observed in sample SB-2 at approximately 8-9 feet bgs. Cullet (waste glass) may have been placed at the site as fill material or disposed of as waste during operation of Libbey Owens Ford Glass Company that was located approximately half a mile north of the Days Inn Site Property. According to Pam Hayes, WVDEP Office of Environmental Remediation (OER), the Site Property and surrounding vicinity was commonly used for cullet disposal.

Subsurface sample, SB-4, was deleted due to interference with utility lines.

3.2 Field Explorations and Methods

Phase II ESA activities were performed at the Days Inn Site Property on July 2, 2008. The sampling team consisted of TRIAD personnel Julie Szymanek, as well as Tim Mehal of Subsurface Inc., Geoprobe® operator. The weather at the Site Property during sampling was warm and sunny around mid 80° Fahrenheit.

Field screening of the soil borings for VOCs was conducted at sample locations using a PID. The PID was pre-calibrated by Field Environmental prior to use according to the manufacturer's instructions. Each soil boring was then field checked immediately following collection for VOCs using the PID.

The sample locations were placed to avoid all utilities including; electric, water, gas, cable, and telephone. The sample locations are depicted on **Figure 2, *Sample Location Map***.

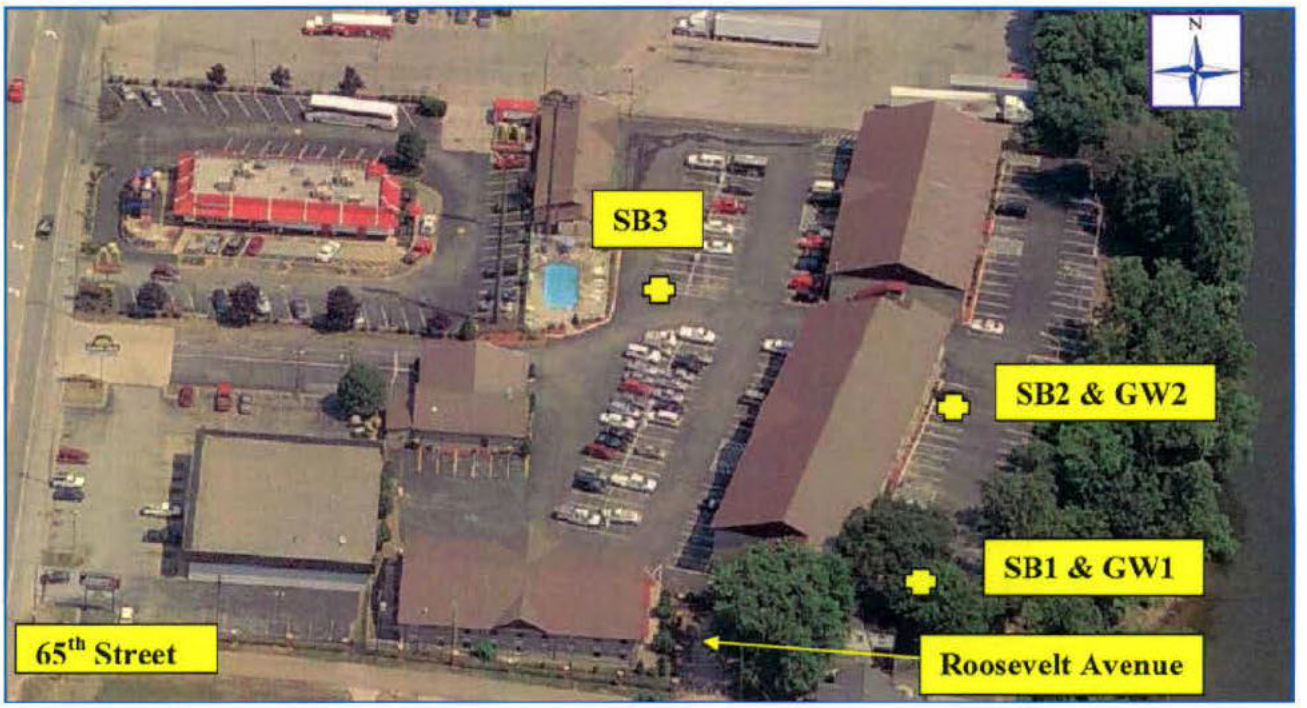


Figure 2. Sample Location Map.

3.3 Sampling and Chemical Analyses and Methods

The direct push Geoprobe® drill rig was used to collect three soil borings. The soil and groundwater samples were collected based on the following criteria: first, at the depth with the highest PID reading (if applicable); second, at the depth groundwater or refusal was encountered (if applicable); and three, at the estimated depth of the former USTs. A Terracore® sampler was then used to extrude soil samples into laboratory provided VOC containers. A clean unused

disposable plastic scoop was used to extrude the soil samples into the laboratory supplied PAH containers, which were also used for lead, cadmium, barium, and arsenic analysis. A temporary well was used when groundwater was encounter to extract the water from the boring into certified laboratory containers.

The samples were preserved on ice in the field immediately following collection and were shipped via Federal Express courier with appropriate chain of custody documentation to the laboratory on July 2, 2008. VOCs in soil were collected and preserved according to United States Environmental Protection Agency (USEPA) method SW5035. VOCs in water were preserved using hydrochloric acid, and metals in water were preserved using nitric acid. The samples were analyzed for VOCs by USEPA method 8260B, PAHs by USEPA method 8270C, and metals by USEPA method 6010B.

All subsurface samples were identified by the prefix "SB" and all groundwater samples were identified by the prefix "GW".

4.0 EVALUATION AND PRESENTATION OF RESULTS

4.1 Site Property Geology, Hydrology, and Topography

Based on the state of West Virginia Geological and Economic Survey map, the underlying geology at the Site Property consists of Pennsylvanian age rock in the Kanawha formation.

Based on review of the United States 1976 USGS 7.5-minute topographic quadrangle map of Charleston East, W.Va., presented as **Figure 1**, ***Site Location Map***, the slope of the Site Property is level. Upper Donnaly Branch is approximately one quarter mile northwest of the Site Property. The Kanawha River is east of the Site Property. Based on available information, groundwater at the Site Property would flow east toward the Kanawha River.

4.2 Subsurface Characteristics

Based on the United States Department of Agriculture (USDA), Soil Conservation Service (SCS), soil at the Site Property is classified as Urban land. These soils are mainly covered by streets, buildings, or other impervious materials. The subsurface soils at the Days Inn Site Property were mainly comprised of fill such as gravel, cobbles, and brick and fine silty clay. Subsurface soil observations during Phase II ESA activities are summarized in the table on the following page:

Table 1. Field Observations

FIELD OBSERVATIONS		
Depth bgs (ft)	PID Reading (ppm)	Description
Subsurface Soil Sample-1		
0 to 4	0	fill(gravel and brick) and medium brown silty clay
4 to 8	0	fill (cobbles, gravel, and brick)
8 to 10	0	fill (cobbles, gravel, and brick)
10 to 16	0	medium brown silty clay-SOIL SAMPLE TAKEN
16 to 20	0	medium brown silty clay
20 to 24	0	medium brown silty clay
24 to 28	0	Sand-AQUEOUS SAMPLE TAKEN
Subsurface Soil Sample-2		
0 to 4	0	fill (gravel and brick) and medium brown silty clay
4 to 7	0	fill (gravel and brick) and medium brown silty clay
7 to 9	0	glass cullet
9 to 12	3.8	charcoal layers-SOIL SAMPLE TAKEN
12 to 16	0	medium brown silty clay and reddish sand
16 to 24	0	medium brown silty clay with grey mottles-AQUEOUS SAMPLE TAKEN
Subsurface Soil Sample-3		
0 to 4	0	fill and silty soil
4 to 8	0	medium brown silty clay with black streaks-SAMPLE TAKEN
8 to 12	0	medium brown silty clay with black streaks

4.3 Field Screening Data

As discussed previously, each soil boring interval was field screened for the presence of VOCs with a PID. The PID screening was performed in-situ

immediately following the soil boring acetate sleeve being brought to the surface and exposed to the atmosphere. A summary table of the PID screening results is presented below as **Table 2, *PID Field Screening Results***.

Table 2. PID Field Screening Results

PID Field Screening Results	
Sample	**PPM**
SB-1	0
SB-2	3.8 (10-12'only)
SB-3	0

4.4 Analytical Data

The subsurface soil and groundwater analytical results were compared to their respective West Virginia risk based concentrations (RBCs) for residential soil and groundwater (*West Virginia Title 60, Series 3, Voluntary Remediation and Redevelopment Rule, Table 60-3B*). Residential concentrations were used since there were individuals residing in the Days Inn hotel. Arsenic, barium, lead, naphthalene, phenanthrene were detected above the laboratory method detection limit for subsurface soil; however, arsenic was the only one to exceed the residential soil RBC. Arsenic, barium, lead, cadmium, and tetrachloroethene were detected above the laboratory method detection limit and the RBCs for groundwater. These COPCs are not considered indicative of petroleum products.

Arsenic, cadmium, lead, and barium would be indicative of cullet disposal which was observed in boring SB-2. Tetrachloroethene (PCE) is most likely indicative of dry cleaning facilities, parts cleaners, or some other manufacturing activity previously unidentified.

The subsurface soil laboratory analytical results for the compounds detected are summarized for ease of review in **Table 3, *Summary of Subsurface Soil Analytical Data***. Concentrations greater than their respective RBCs levels for residential soil are denoted in bold.

Table 3. Summary of Subsurface Soil Analytical Data

COPC	SB-1 (mg/Kg)	SB-2 (mg/Kg)	SB-3 (mg/Kg)	Residential Soil RBC (mg/Kg)
Arsenic	NA	**32**	NA	0.39
Barium	NA	860	NA	15000
Cadmium	NA	ND	NA	39
Lead	15	120	13	400
Naphthalene	ND	1.9	ND	56000
Phenanthrene	ND	.75	ND	22000

ND-not detected

NA-Not available

The groundwater laboratory results for the compounds detected are summarized for ease of review in **Table 4, Summary of Groundwater Analytical Data** on the following page. Concentrations greater than their respective RBCs levels for groundwater are denoted in bold.

Table 4. Summary of Groundwater Analytical Data

COPC	GW-1 (ug/L)	GW-2 (ug/L)	Ground Water RBC (ug/L)
Arsenic	NA	**0.85**	0.010
Barium	NA	**36**	2
Cadmium	NA	**0.0082**	0.005
Lead	**1.5**	**3.3**	0.015
Tetrachloroethene	**15**	ND	5

ND-not detected

NA-Not available

The laboratory analytical data sheets are presented in **Appendix 3, *Laboratory Results***.

5.0 CONCLUSIONS AND RECOMMENDATIONS

TRIAD has performed a Phase II ESA site characterization investigation at the property known as the Days Inn property located at 6400 MacCorkle Avenue

S.E. in Charleston, Kanawha County, West Virginia.

TRIAD concludes that the soils on the property have not been adversely impacted by leaking petroleum USTs or spills that may have historically occurred. However, the groundwater soil has been impacted potentially by cullet observed in the subsurface and an unidentified source of PCE. Therefore, there are identified recognized environmental conditions at the Site Property.

Based on the results of the Phase II ESA, TRIAD recommends the following:

- The analytical results be reported to the West Virginia Department of Environmental Protection (WVDEP).
- The Site Property owner confers with the WVDEP as to whether remedial action is warranted.
- An Extent of Contamination study be performed in the area of SB-2 for the presence of As, Ba, Cd, and Pb. In the area of SB-1 for Pb and PCE.
- Refer the client to consider an application for the Site Property to be entered into the State of West Virginia's Voluntary Remediation Program. This program offers environmental liability protection. Further, the program provides a Certificate of Completion (COC) to applicants who successfully demonstrate that their site meets risk-based human health and ecological standards.

TRIAD ENGINEERING, INC.

APPENDIX 1

SITE PROPERTY PHOTOGRAPHS

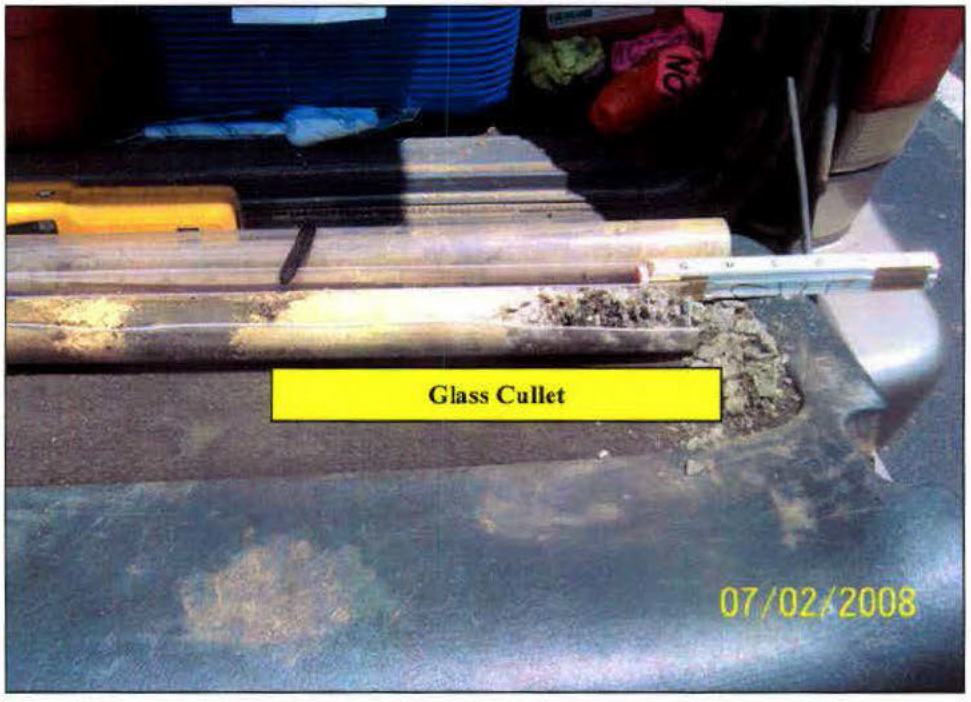
Photograph # 1:
View of sample location SB1 and GW1, looking southeast.

Photograph # 2:
View of sleeve from 0-4 feet bgs at SB1.

TRIAD ENGINEERING, INC.

TRIAD PROJECT NO: **01-08-0208**	Page 1 of 4
DATE: **7-2-2008**	
CLIENT: **BB&T**	
PROJECT:	
ESA081525-Days Inn **6400 MacCorkle Avenue S.E.** **Charleston, West Virginia 25304**	

Photograph # 3:
View of sample location SB2 and GW2, looking west from eastern portion of the Site Property.



Photograph # 4:
View of glass cullet at 7-8 feet bgs at SB2.

Photograph # 5:
View of sleeves from SB2 from 0-16 feet bgs.

Photograph # 6:
View of sample location SB3.

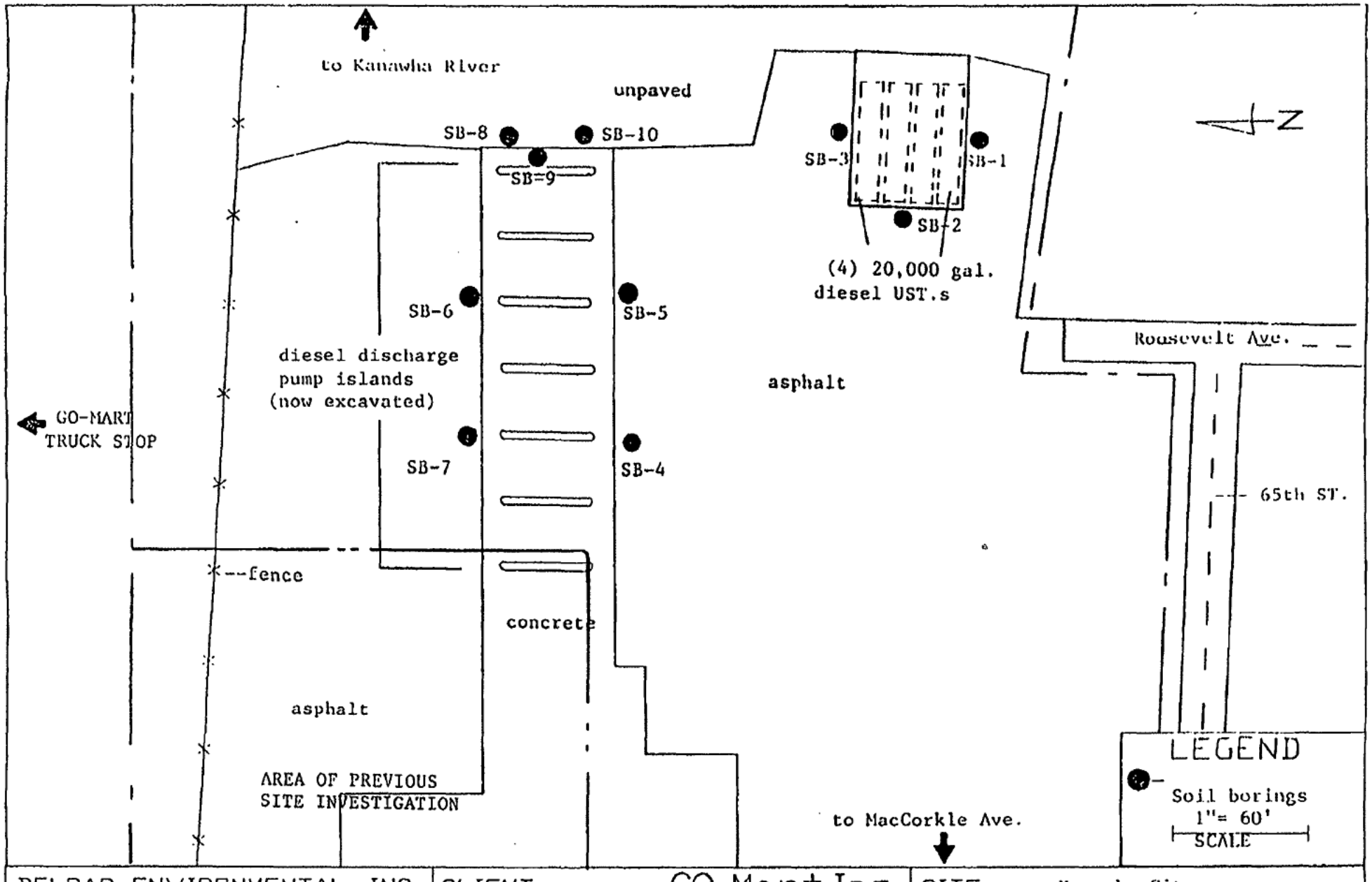
Photograph # 7:
View of sample location SB3.

Photograph # 8:
View of Days Inn Site Property facing east towards the Kanawha River.

TRIAD ENGINEERING, INC.

APPENDIX 2

HISTORICAL MAPS



BELPAR ENVIRONMENTAL, INC.
P.O. BOX 8278, SOUTH CHARLESTON, WV 25303
An Ameriquest Company

CLIENT: GO-Mart, Inc. SITE: Kanawha City, W.Va.

PROJECT NO.: GW-320
DRAWING NO.: 1
DRAWN BY: D. Casteel
DATE: 12-18-89

APPROVED BY:

NO.	REVISION	DATE
1		
2		
3		
4		
5		
6		

PLAT of RESURVEY for

HEATER OIL COMPANY, INC.

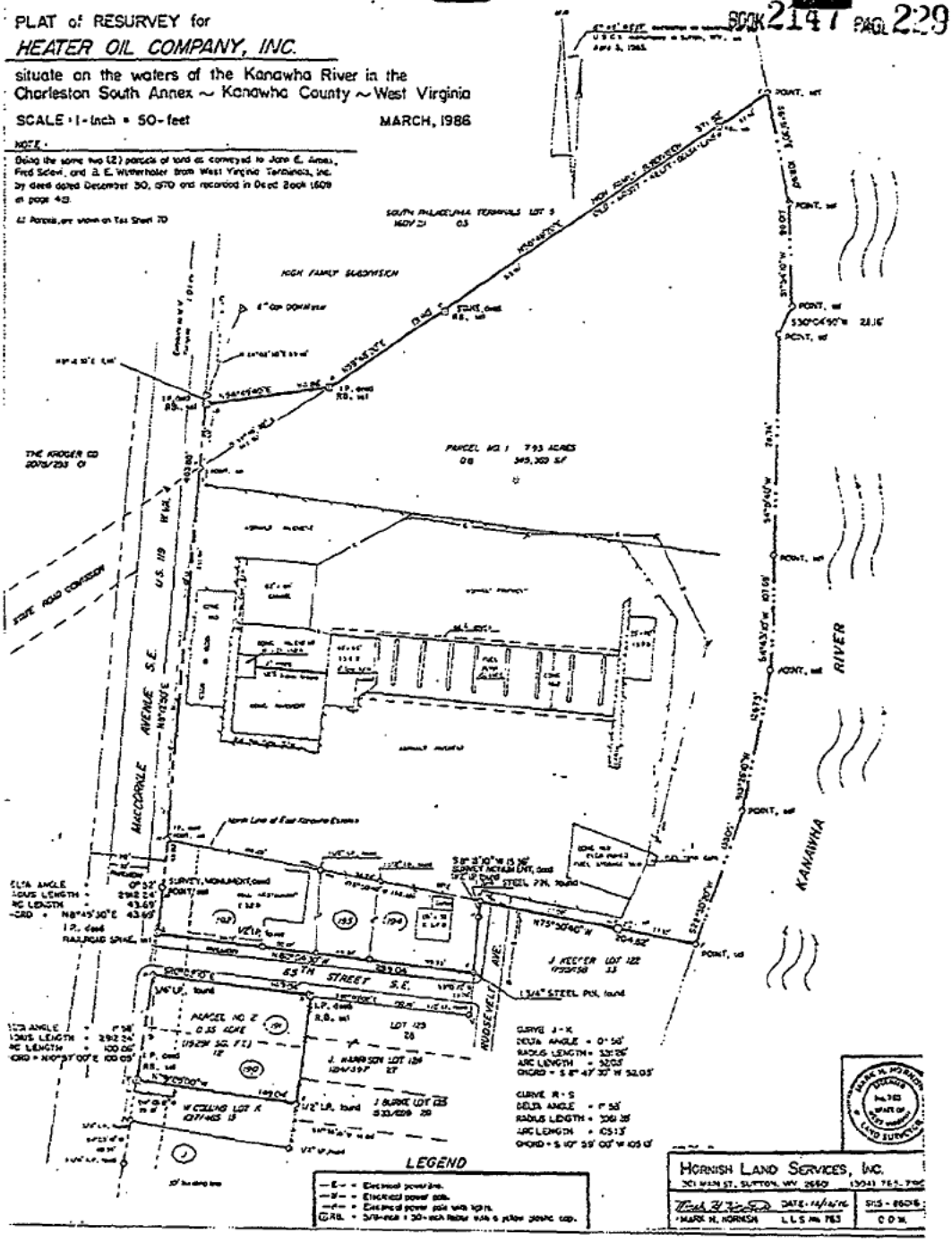
situate on the waters of the Kanawha River in the Charleston South Annex ~ Kanawha County ~ West Virginia

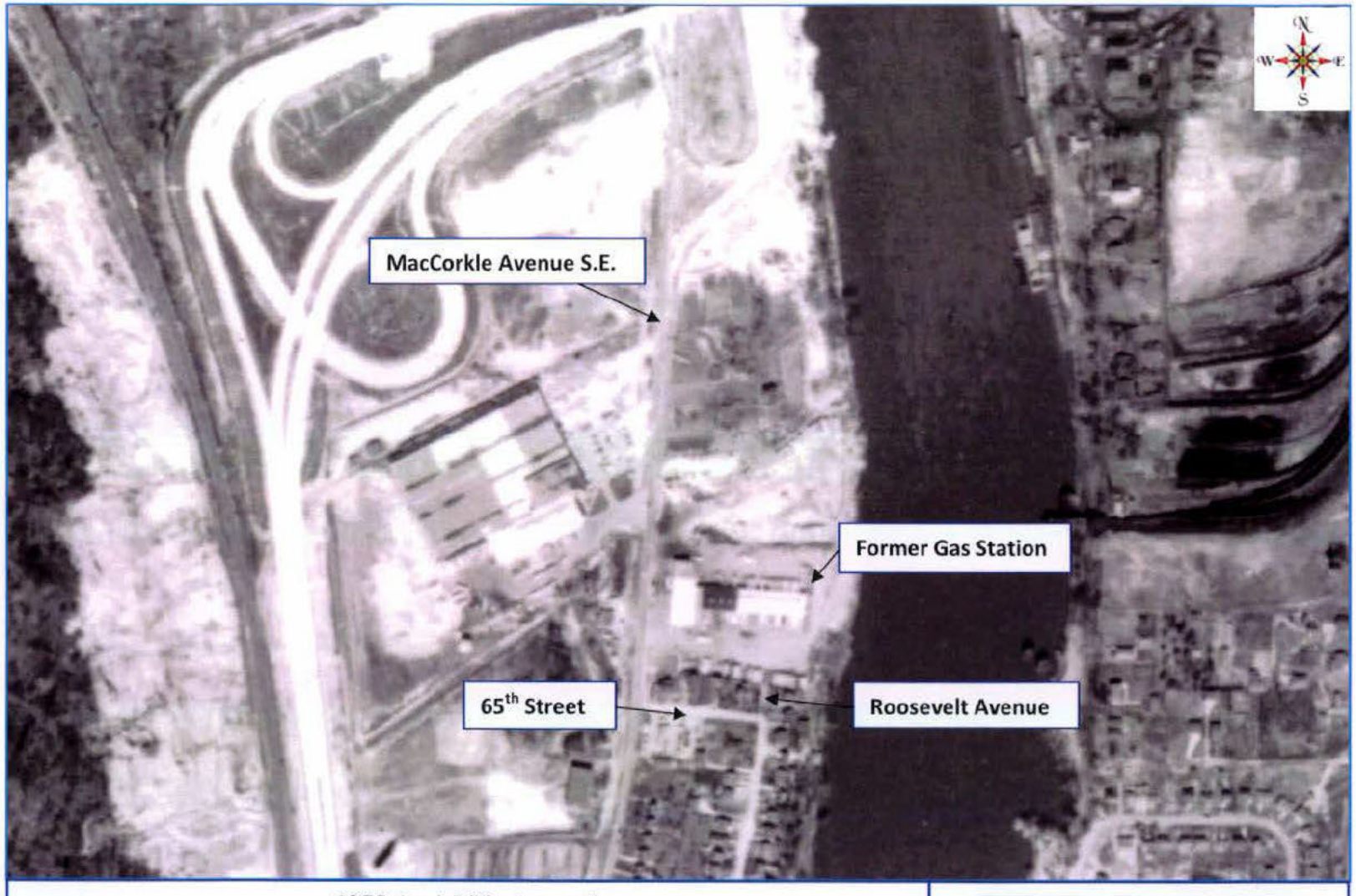
SCALE : 1-inch = 50-feet MARCH, 1986

NOTE :

Being the same two (2) parcels of land as conveyed to John E. Amos, Fred Sclavi, and B. E. Wittenholer from West Virginia Terminals, Inc. by deed dated December 30, 1970 and recorded in Deed Book 1609 at page 403.

(2 Parcels, are shown on Tax Sheet 70)





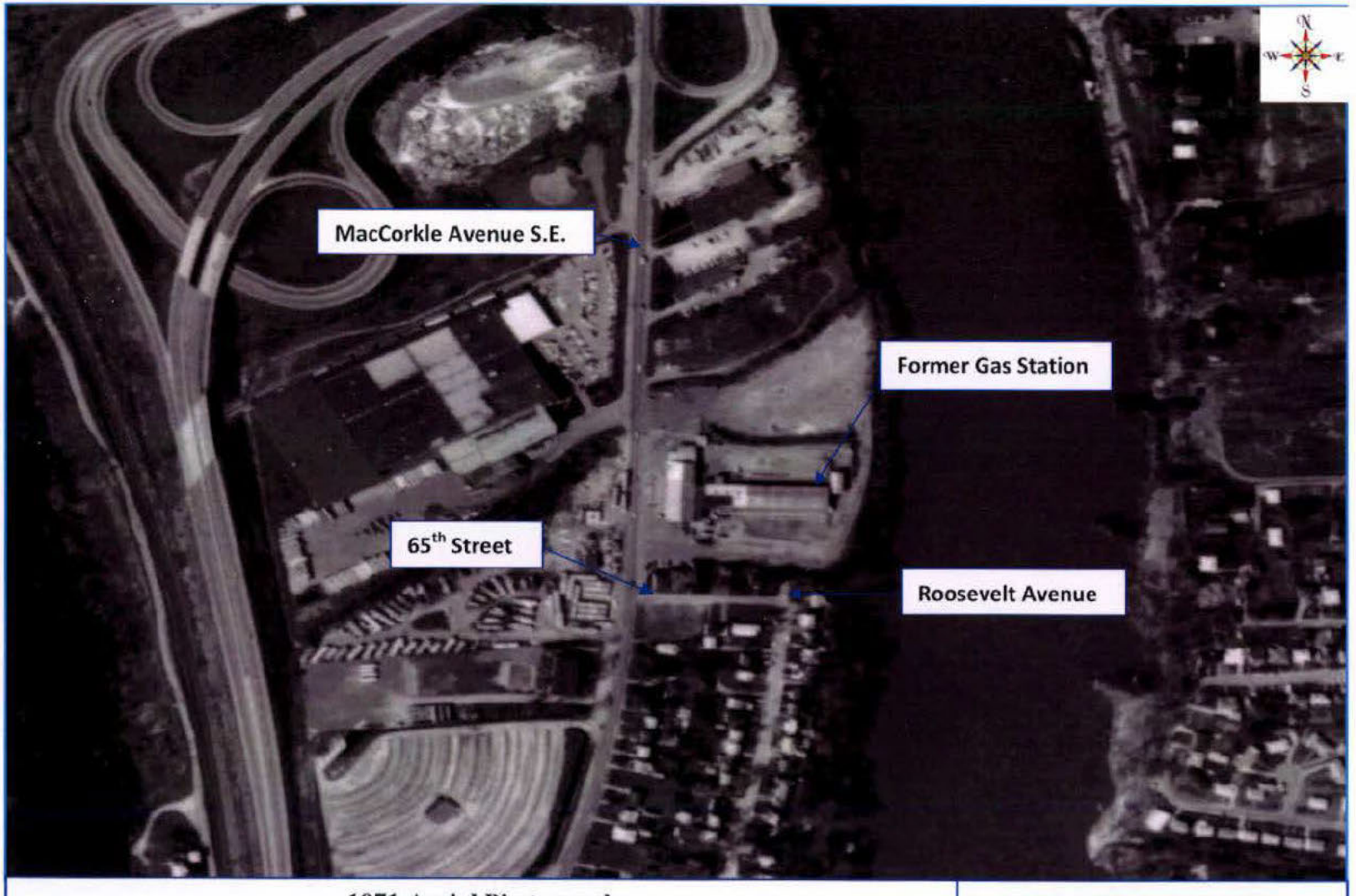
1955 Aerial Photograph

Days Inn

Charlestown, West Virginia

Source: *WVGES*

Triad Engineering, Inc.



1971 Aerial Photograph

Days Inn

Charlestown, West Virginia

Source: *WVGES*

Triad Engineering, Inc.

TRIAD ENGINEERING, INC.

APPENDIX 3

LABORATORY RESULTS

July 9, 2008

Non-responsive based on revised scope.

Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Non-responsive based on revised scope.

Enclosed are analytical results for samples submitted to Pace Analytical by Triad Engineering, Inc. - WV. The samples were received on July 3, 2008. The results reported in this project meet the requirements as specified in Chapter 5 of the NELAC Standards. Any deviations or discrepancies from the NELAC standards are documented in the case narrative(s) of this report. Parameters printed in italics represent Non-NELAC accredited parameters. Please reference Pace project number 08-4949 when inquiring about this report.

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Pace Sample Identification	Client Sample Identification
0807-0752	SB1
0807-0753	SB2
0807-0754	SB3
0807-0755	GW1
0807-0756	GW2

General Comments: Cooler temperature 10.1 ° C upon receipt. Ice was present. Insufficient sample volume has been provided for the performance of a sample matrix spike/matrix spike duplicate, therefore extraction of a blank (reagent water) spike and spike duplicate have been performed.

Please call me if you have any questions regarding the information contained within this report.

Sincerely,

Non-responsive based on revised scope.

Project Manager

RDC: rdc

Enclosures

[redacted]

Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Lab Project ID: **08-4949**
Lab Sample ID: **0807-0752**
Client Sample ID: SB1
Sample Matrix: Solid

Date Sampled: 07/02/2008
Date Received: 07/03/2008

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	82	N/A	%	DAB	07/07/2008	N/A	N/A

Metals

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Trace Metals, Total, ICP								
Lead	6010B(1)	15	0.61	mg/kg	CS0	07/08/2008	0074571-1	<0.50

Semivolatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Semivolatile Organic Compounds, GC/MS								
Acenaphthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Acenaphthylene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(b)fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(ghi)perylene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(k)fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Chrysene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Dibenz(a,h)anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluorene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Indeno(1,2,3-cd)pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Naphthalene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Phenanthrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Acetone	8260B(1)	35	12	ug/kg	JEC	07/07/2008	0074619-1	11

(Continued)

Lab Sample ID: **0807-0752**
Client Sample ID: SB1

Volatiles (Cont.)

Benzene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromodichloromethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromoform	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromomethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Butanone	8260B[1]	<12	12	ug/kg	JEC	07/07/2008	0074619-1	<10
Carbon Disulfide	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Carbon Tetrachloride	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chlorobenzene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroform	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloromethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Dibromochloromethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,2-Dichloroethene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,2-Dichloroethene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloropropane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,3-Dichloropropene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,3-Dichloropropene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Ethylbenzene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Hexanone	8260B[1]	<12	12	ug/kg	JEC	07/07/2008	0074619-1	<10
4-Methyl-2-pentanone	8260B[1]	<12	12	ug/kg	JEC	07/07/2008	0074619-1	<10
Methylene chloride	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	8.5
Styrene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2,2-Tetrachloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Tetrachloroethene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Toluene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,1-Trichloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2-Trichloroethane	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Trichloroethene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Vinyl chloride	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
o-Xylene	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0
m,p-Xylenes	8260B[1]	<6.1	6.1	ug/kg	JEC	07/07/2008	0074619-1	<5.0

[1] U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

[redacted]
Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Lab Project ID: **08-4949**
Lab Sample ID: **0807-0753**
Client Sample ID: SB2
Sample Matrix: Solid

Date Sampled: 07/02/2008
Date Received: 07/03/2008

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	82	N/A	%	DAB	07/07/2008	N/A	N/A

Metals

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Trace Metals, Total, ICP								
Arsenic	6010B(1)	32	0.61	mg/kg	CS0	07/08/2008	0074571-1	<0.50
Barium	6010B(1)	860	2.4	mg/kg	CS0	07/08/2008	0074571-1	<2.0
Cadmium	6010B(1)	<0.24	0.24	mg/kg	CS0	07/08/2008	0074571-1	<0.20
Lead	6010B(1)	120	0.61	mg/kg	CS0	07/08/2008	0074571-1	<0.50

Semivolatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Semivolatile Organic Compounds, GC/MS								
Acenaphthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Acenaphthylene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(b)fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(ghi)perylene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(k)fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Chrysene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Dibenz(a,h)anthracene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluoranthene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluorene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Indeno(1,2,3-cd)pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Naphthalene	8270C(1)	1900	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Phenanthrene	8270C(1)	750	400	ug/kg	SPL	07/08/2008	0074555-1	<330
Pyrene	8270C(1)	<400	400	ug/kg	SPL	07/08/2008	0074555-1	<330

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								

(Continued)

Lab Sample ID: **0807-0753**
Client Sample ID: SB2

Volatiles (Cont.)

Acetone	8260B[1]	38	14	ug/kg	JEC	07/07/2008	0074619-1	11
Benzene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromodichloromethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromoform	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromomethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Butanone	8260B[1]	<14	14	ug/kg	JEC	07/07/2008	0074619-1	<10
Carbon Disulfide	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Carbon Tetrachloride	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chlorobenzene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroform	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloromethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Dibromochloromethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,2-Dichloroethene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,2-Dichloroethene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloropropane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,3-Dichloropropene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,3-Dichloropropene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Ethylbenzene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Hexanone	8260B[1]	<14	14	ug/kg	JEC	07/07/2008	0074619-1	<10
4-Methyl-2-pentanone	8260B[1]	<14	14	ug/kg	JEC	07/07/2008	0074619-1	<10
Methylene chloride	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	8.5
Styrene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2,2-Tetrachloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Tetrachloroethene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Toluene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,1-Trichloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2-Trichloroethane	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Trichloroethene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Vinyl chloride	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
o-Xylene	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0
m,p-Xylenes	8260B[1]	<6.8	6.8	ug/kg	JEC	07/07/2008	0074619-1	<5.0

[1] U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

[redacted]
Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Lab Project ID: **08-4949**
Lab Sample ID: **0807-0754**
Client Sample ID: SB3
Sample Matrix: Solid

Date Sampled: 07/02/2008
Date Received: 07/03/2008

Inorganic Extraction

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Percent Solids	% Solids	89	N/A	%	DAB	07/07/2008	N/A	N/A

Metals

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Trace Metals, Total, ICP								
Lead	6010B(1)	13	0.56	mg/kg	CS0	07/08/2008	0074571-1	<0.50

Semivolatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Semivolatile Organic Compounds, GC/MS								
Acenaphthene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Acenaphthylene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Anthracene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)anthracene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(a)pyrene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(b)fluoranthene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(ghi)perylene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Benzo(k)fluoranthene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Chrysene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Dibenz(a,h)anthracene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluoranthene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Fluorene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Indeno(1,2,3-cd)pyrene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Naphthalene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Phenanthrene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330
Pyrene	8270C(1)	<370	370	ug/kg	SPL	07/08/2008	0074555-1	<330

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Acetone	8260B(1)	19	11	ug/kg	JEC	07/07/2008	0074619-1	11

(Continued)

Lab Sample ID: **0807-0754**
Client Sample ID: SB3

Volatiles (Cont.)

Benzene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromodichloromethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromoform	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Bromomethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Butanone	8260B[1]	<11	11	ug/kg	JEC	07/07/2008	0074619-1	<10
Carbon Disulfide	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Carbon Tetrachloride	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chlorobenzene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloroform	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Chloromethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Dibromochloromethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1-Dichloroethene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,2-Dichloroethene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,2-Dichloroethene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,2-Dichloropropane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
cis-1,3-Dichloropropene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
trans-1,3-Dichloropropene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Ethylbenzene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
2-Hexanone	8260B[1]	<11	11	ug/kg	JEC	07/07/2008	0074619-1	<10
4-Methyl-2-pentanone	8260B[1]	<11	11	ug/kg	JEC	07/07/2008	0074619-1	<10
Methylene chloride	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	8.5
Styrene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2,2-Tetrachloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Tetrachloroethene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Toluene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,1-Trichloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
1,1,2-Trichloroethane	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Trichloroethene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
Vinyl chloride	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
o-Xylene	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0
m,p-Xylenes	8260B[1]	<5.6	5.6	ug/kg	JEC	07/07/2008	0074619-1	<5.0

[1] U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported in dry weight equivalence.

[redacted]
Non-responsive based on revised scope

Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Lab Project ID: **08-4949**
Lab Sample ID: **0807-0755**
Client Sample ID: GW1
Sample Matrix: Aqueous

Date Sampled: 07/02/2008
Date Received: 07/03/2008

Metals

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Trace Metals, Total, ICP								
Lead	6010B(1)	1.5	0.0050	mg/l	CS0	07/08/2008	0074610-1	<0.0020

Semivolatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Semivolatile Organic Compounds, GC/MS								
Acenaphthene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Acenaphthylene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Anthracene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Benzo(a)anthracene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Benzo(a)pyrene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Benzo(b)fluoranthene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Benzo(ghi)perylene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Benzo(k)fluoranthene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Chrysene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Dibenz(a,h)anthracene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Fluoranthene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Fluorene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Indeno(1,2,3-cd)pyrene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Naphthalene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Phenanthrene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0
Pyrene	8270C(1)	<2.0	2.0	ug/l	SPL	07/08/2008	0074553-1	<1.0

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Acetone	8260B(1)	<10	10	ug/l	EAC	07/07/2008	0074611-1	<10
Benzene	8260B(1)	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Bromodichloromethane	8260B(1)	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Bromoform	8260B(1)	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Bromomethane	8260B(1)	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0

(Continued)

Lab Sample ID: **0807-0755**
Client Sample ID: GW1

Volatiles (Cont.)

2-Butanone	8260B[1]	<10	10	ug/l	EAC	07/07/2008	0074611-1	<10
Carbon Disulfide	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Carbon Tetrachloride	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Chlorobenzene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Chloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Chloroform	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Chloromethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Dibromochloromethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,1-Dichloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,2-Dichloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,1-Dichloroethene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
cis-1,2-Dichloroethene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
trans-1,2-Dichloroethene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,2-Dichloropropane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
cis-1,3-Dichloropropene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
trans-1,3-Dichloropropene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Ethylbenzene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
2-Hexanone	8260B[1]	<10	10	ug/l	EAC	07/07/2008	0074611-1	<10
4-Methyl-2-pentanone	8260B[1]	<10	10	ug/l	EAC	07/07/2008	0074611-1	<10
Methylene chloride	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Styrene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,1,2,2-Tetrachloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Tetrachloroethene	8260B[1]	15	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Toluene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,1,1-Trichloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
1,1,2-Trichloroethane	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Trichloroethene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
Vinyl chloride	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074611-1	<2.0
o-Xylene	8260B[1]	<1.0	1.0	ug/l	EAC	07/07/2008	0074611-1	<1.0
m,p-Xylenes	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074611-1	<2.0

[1] U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis. Due to the large amount of sediment in the VOA vial, the water portion of the sample was transferred to a new VOA vial prior to analysis.

[redacted]
Triad Engineering, Inc. - WV
219 Hartman Road
Morgantown, WV 26505

Client Site: Days Inn
Client Ref.: VOC, PAHs, Metals

Lab Project ID: **08-4949**
Lab Sample ID: **0807-0756**
Client Sample ID: GW2
Sample Matrix: Aqueous

Date Sampled: 07/02/2008
Date Received: 07/03/2008

Metals

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Trace Metals, Total, ICP								
Arsenic	6010B(1)	0.85	0.025	mg/l	CS0	07/08/2008	0074610-1	<0.0050
Barium	6010B(1)	36	0.050	mg/l	CS0	07/08/2008	0074610-1	<0.010
Cadmium	6010B(1)	0.0082	0.0050	mg/l	CS0	07/08/2008	0074610-1	<0.0010
Lead	6010B(1)	3.3	0.0050	mg/l	CS0	07/08/2008	0074610-1	<0.0020

Volatiles

Test	Method	Result	Reporting Limit	Units	Analyst	Analysis Date	Method Blank ID	Blank Result
Volatile Organic Compounds, MS								
Acetone	8260B(1)	<20	20	ug/l	EAC	07/07/2008	0074612-1	<10
Benzene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Bromodichloromethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Bromoform	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Bromomethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
2-Butanone	8260B(1)	<20	20	ug/l	EAC	07/07/2008	0074612-1	<10
Carbon Disulfide	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Carbon Tetrachloride	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Chlorobenzene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Chloroethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Chloroform	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Chloromethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Dibromochloromethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,1-Dichloroethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,2-Dichloroethane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,1-Dichloroethene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
cis-1,2-Dichloroethene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
trans-1,2-Dichloroethene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,2-Dichloropropane	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
cis-1,3-Dichloropropene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
trans-1,3-Dichloropropene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Ethylbenzene	8260B(1)	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
2-Hexanone	8260B(1)	<20	20	ug/l	EAC	07/07/2008	0074612-1	<10

(Continued)

Lab Sample ID: **0807-0756**
Client Sample ID: GW2

Volatiles (Cont.)

4-Methyl-2-pentanone	8260B[1]	<20	20	ug/l	EAC	07/07/2008	0074612-1	<10
Methylene chloride	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Styrene	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,1,2,2-Tetrachloroethane	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Tetrachloroethene	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Toluene	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,1,1-Trichloroethane	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
1,1,2-Trichloroethane	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Trichloroethene	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
Vinyl chloride	8260B[1]	<4.0	4.0	ug/l	EAC	07/07/2008	0074612-1	<2.0
o-Xylene	8260B[1]	<2.0	2.0	ug/l	EAC	07/07/2008	0074612-1	<1.0
m,p-Xylenes	8260B[1]	<4.0	4.0	ug/l	EAC	07/07/2008	0074612-1	<2.0

[1] U.S. Environmental Protection Agency, 1996, Test Methods for Evaluating Solid Waste, SW-846, 3rd ed., Office of Solid Waste and Emergency Response, Washington, DC.

Sample Comments: Results reported on an as received basis. Due to the large amount of sediment in the VOA vial, the water portion of the sample was transferred to a new VOA vial prior to analysis. The pH of the VOA vial used for analysis was 7. Due to limited sample the sample had to be diluted thus the detection limit has been elevated.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: / of /

1208652

Section A Required Client Information:
Company: Triad Engineering
Address: 219 Hart Run Rd.
Morgantown WV 26505
Non-responsive based on revised scope.
Requested Due Date/TAT: July 8

Section B Required Pro
Report To: Non-responsive based on revised scope.
Copy To:
Purchase Order No.:
Project Name: Days Inn
Project Number:

Section C Invoice Information:
Attention: Non-responsive based on revised scope.
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☑ OTHER Soil

Site Location STATE: WV

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: VOC – 8260	PAHs – 8270	Lead – 6010	As, Pb, Ba, Cd – 6010	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB1	SL	G	—	—	7/2	11:50am		5	2					2	–		✓	✓	✓	✓		0807-0752
2	SB2	SL	G	—	—	7/2	2:07pm		5	2					2	–		✓	✓	✓	✓ DOC 7/15/08		53
3	SB3	SL	G	—	—	7/2	4:20pm		5	2					2	–		✓	✓	✓			54
4	GW1	WT	G	—	—	7/2	12:25pm		5	2		1	2					✓	✓	✓			55
5	GW2	WT	G	—	—	7/2	3:00pm		3			1	2					✓			✓		56
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Rush 48hrs Due July 8	Fed Ex			Samantha Bynum	7/3/08	1050	10.1	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Non-responsive based on revised scope.
SIGNATURE of Non-responsive based on revised scope. DATE Signed (MM/DD/YY): 07/02/08

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.

F-ALL-Q-020rev.07, 15-May-2007

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	1.50E+01	Tetrachloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
12	50	853	300	553		B	SIC	LS		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
LS	1.62	0.390	0.076	SIC	1.38	0.481	0.216	C	1.43	0.459	0.215

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
12	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	10	20	1.0E-06	1
				Used to calculate risk-based groundwater concentration.	

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.8E-09	1.2E-06

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

GW-ADV Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	1.50E+01	Tetrachloroethylene

MORE ↓

ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Totals must add up to value of L_{WT} (cell G28)							
12	50	853	300	553		B	SIC	LS		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
LS	1.62	0.390	0.076	SIC	1.38	0.481	0.216	C	1.43	0.459	0.215

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
12	40	1000	1000	366	0.1	0.25	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	25	250	1.0E-05	1
				Used to calculate risk-based groundwater concentration.	

END

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	2.00E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
5.5E-08	3.7E-05

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END